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10/587,163	07/26/2006	Koji Kubo	Q96134	4858

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
GARDNER, SHANNON M	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
02/25/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com
PPROCESSING@SUGHRUE.COM
USPTO@SUGHRUE.COM

Office Action Summary	Application No.	Applicant(s)	
	10/587,163	KUBO ET AL.	
	Examiner	Art Unit	
	Shannon Gardner	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2009 (Amendment)*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 5-13* is/are pending in the application.

4a) Of the above claim(s) *11-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 5-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/4/2009, 11/09/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment of 11/9/2009 does not render the application allowable.

Remarks

Applicant has amended claims 1, 5 and 7 and cancelled claims 3-4. Claims 11-13 remain withdrawn as per a previous restriction requirement. Currently, claims 1-2 and 5-10 are pending in the application and are considered on their merits below.

Information Disclosure Statement

1. The information disclosure statements (IDS) were submitted on 9/4/2009 and 11/9/2009. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Status of Objections and Rejections

The rejection of claim 4 under 35 U.S.C 112, second paragraph as being indefinite is obviated by Applicant's cancellation.

The rejection of claims 5 and 7 under 35 U.S.C 112, second paragraph as being indefinite is withdrawn in view of Applicant's amendment.

All other rejections from the previous office action are withdrawn in view of Applicant's amendments. New grounds of rejection necessitated by the amendments are set forth below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-2, 9 and 10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Abe et al. (JP 2002-050413, machine translation provided).

As to claim 1, Abe is directed to a laminated film for a dye-sensitized solar cell (abstract, paragraph [0001]) characterized by comprising:

- A polyester film (PET) (paragraph [0005]) and
- A transparent conductive layer (ITO) formed on one side thereof (paragraph [0005])

It is the Examiner's position that the laminated film of Abe et al. teaches the structural limitations of the instant claim and will therefore the transparent conductive layer will inherently have the specified surface tension (40 mN/m or greater). If it is not

taken that the surface tension is an inherent property to the transparent conductive oxide layer of the laminate, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the surface tension to be at least 45 mN/m to ensure better adhesion between the layers of the laminate, as evidenced by Murschall (US 20010029274; paragraph [0005] and [0123]).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the PET film of Abe et al. will inherently have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm.

Further, the Examiner asserts that the polyester film of Abe et al. will inherently have an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and widthwise direction of the film. If it is not taken that this property is inherent, then it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of the polyester film to maintain similar shrinkage in both directions (lengthwise and widthwise) as evidenced by Applicant's Specification (pp 8, line 28 to pp 9, line 11) thereby having an absolute value no greater than 0.8% for the difference.

The Examiner notes that the limitation of "upon treatment of 10 minutes at 200°C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 2, It is the Examiner's position that the laminated film of Abe et al. teaches the structural limitations of the instant claim and will therefore the transparent conductive layer will inherently have the specified surface tension (65 mN/m or greater). If it is not taken that the surface tension is an inherent property to the transparent conductive oxide layer of the laminate, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the surface tension to ensure better adhesion between the layers of the laminate, as evidenced by Murschall (US 20010029274; paragraph [0005] and [0123]).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 9, Abe et al. teaches an electrode for a dye-sensitized solar cell electrode (abstract) comprising a laminated film for a dye-sensitized solar cell (PET and ITO; abstract and paragraph [0001]) and a porous semiconductor layer formed on the transparent conductive layer (abstract).

Regarding claim 10, Abe et al. teaches the porous semiconductor layer comprising titanium oxide (paragraph [0052]).

4. Claims 1-2, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (JP 2002-050413, machine translation provided) in view of Murschall (US 20010029274).

As to claim 1, Abe is directed to a laminated film for a dye-sensitized solar cell (abstract, paragraph [0001]) characterized by comprising:

- A polyester film (PET) (paragraph [0005]) and
- A transparent conductive layer (ITO) formed on one side thereof (paragraph [0005])

Abe et al. is silent as to the transparent conductive layer having a surface tension of 40 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the PET film of Abe et

al. will inherently have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm. Further, it is the Examiner's position that the polyester film of Abe et al. will inherently have an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and widthwise direction of the film. If it is not taken that this property is inherent, then it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of the polyester film to maintain similar shrinkage in both directions (lengthwise and widthwise) as evidenced by Applicant's Specification (pp 8, line 28 to pp 9, line 11) thereby having an absolute value no greater than 0.8% for the difference.

The Examiner notes that the limitation of "upon treatment of 10 minutes at 200^{o}C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 2, Abe is silent as to the surface tension of the transparent conductive layer being 65 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 9, Abe et al. teaches an electrode for a dye-sensitized solar cell electrode (abstract) comprising a laminated film for a dye-sensitized solar cell (PET and ITO; abstract and paragraph [0001]) and a porous semiconductor layer formed on the transparent conductive layer (abstract).

Regarding claim 10, Abe et al. teaches the porous semiconductor layer comprising titanium oxide (paragraph [0052]).

5. Claims 1, 5, 8-9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 6291763) in view of Murschall (US 20010029274).

As to claim 1, Nakamura is directed to a laminated film for a dye-sensitized solar cell (abstract) characterized by comprising:

- A polyester film (PET) (column 6, lines 8-13) and
- A transparent conductive layer (ITO) formed on one side thereof (column 5, lines 57-63)

Nakamura is silent as to the transparent conductive layer having a surface tension of 40 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Nakamura teaches the polyester film being PET (column 6, lines 8-13), a material disclosed by Applicant as an appropriate polyester for the laminate (see Specification pp 3, lines 12-16). Therefore, it is the Examiner’s position that the polyester film of Nakamura will have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm.

Examiner Note: Nakamura teaches that his film is "substantially transparent" meaning it has a transmission of preferably 70% of more at visible light (400 nm to 900 nm) (column 5, lines 52-57).

modified Nakamura is silent as to the polyester film having an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and the widthwise direction of the film.

However, as noted by Applicant’s Specification (pp 8, line 28 to pp 9, line 11) the modifications of a film by a heat treatment step or a heat relaxation step to alter the heat shrinkage rates in the lengthwise and widthwise direction are well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of modified Nakamura’s film in

the lengthwise and widthwise directions with a reasonable expectation of success by the methods disclosed in Applicant's Specification. Further, it would have been obvious to achieve a desired relationship between the two rates to ensure proper adhesion between the laminated layers and to prevent peeling.

The Examiner notes that the limitation of "upon treatment of 10 minutes at 200°C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 5, modified Nakamura is silent as to the polyester film having a heat shrinkage of 0-0.5% in the lengthwise direction of the film.

However, as noted by Applicant's Specification (pp 8, line 28 to pp 9, line 11) the modifications of a film by a heat treatment step or a heat relaxation step to alter the heat shrinkage rates in the lengthwise and widthwise direction are well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to try to modify the heat shrinkage in the lengthwise direction of the film of modified Nakamura as taught by Applicant's Specification to achieve a desired level of shrinkage.

The Examiner notes that "upon treatment for 10 minutes at 200°C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 8, modified Nakamura teaches an anti-reflection layer on the side of the laminated film opposite the transparent conductive layer side (column 31, lines 46-50).

Regarding claims 9 and 10, modified Nakamura teaches an electrode for a dye-sensitized solar cell electrode comprising a laminated film for a dye-sensitized solar cell according to claim 1 (see full discussion of references above) and a porous semiconductor (TiO_2) layer formed on its transparent conductive layer (ITO) (column 4, lines 61-67; column 5, lines 57-62; column 6, lines 34-35).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 6291763) in view of Murschall (US 20010029274) as applied to claim 1 above, and further in view of Tamai et al. (US 20020037399).

Regarding claims 6 and 7, Applicant is directed above for a full discussion of Nakamura in view of Murschall as applied to claim 1. Modified Nakamura is silent as to the laminated film further comprising a readily adhesive layer with a thickness of 10-200 nm between the polyester film and the transparent conductive layer and as to a hard coat layer between the readily adhesive layer and the transparent conductive layer.

However, it is known in the laminated film art to utilize a readily adhesive layer (4) such as a resin (paragraph [0049]) as taught by Tamai to ensure proper and longstanding adhesion between two adjacent layers.

Further, Tamai teaches a hard coat layer (2/3) above the readily adhesive layer to help protect and prevent cracking (paragraph [0081]-[0082]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a readily adhesive layer such as a resin as taught by Tami between the polyester and transparent conductive films of modified Nakamura and a

hard coat layer between the readily adhesive layer and the transparent conductive layer to ensure proper and longstanding adhesion between the two layers.

The references are silent as to the readily adhesive layer having a thickness of 10-200 nm. However, in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Further, it would have been obvious to one of ordinary skill in the art to modify the thickness of the layer to achieve the desired adhesion strength as evidenced by Tamai (paragraph [0086]).

Response to Arguments

7. Applicant's arguments filed 11/9/2009 have been fully considered but they are not persuasive:

Applicant argues that the amendment to claim 11 limits the process of claim 11 to a process for the production of an electrode as claimed in claim 9 and requests reconsideration of rejoinder (pp 5 of Arguments).

The Examiner respectfully disagrees. The restriction of claims 11-13 is still proper and is therefore maintained. If there is a finding of allowable subject matter in claim 9, the issue of rejoinder can be revisited at that time.

Applicant argues that Abe et al. Nakamura et al. fail to disclose the limitations of Applicant's present invention (discussed as (A), (B) and (C) on pp 8 of Arguments).

The Examiner respectfully disagrees and directs Applicant above for a full discussion of the references as applied to the instant claims. The Examiner notes that the rejections made to the instant claims are not anticipatory 102 rejections but are made under the statue of 35 U.S.C 103(a). Further, Applicant fails to address any motivation statements provided in the previous office action.

Applicant argues that “the transparent conductive layer without activation of the surface by plasma treatment and other things does not have a surface tension of 40 mN/n or greater” (pp 8 of Arguments).

The Examiner respectfully directs Applicant above for a full discussion of the references (Abe and Nakamura) especially as evidenced by Murschall. Murschall (US 20010029274) teaches the modification of surface tension to ensure better adhesion between layers of a laminate structure. Further, the Examiner notes that Applicant's argument is not commensurate in scope with the claims as the "activation of the surface by plasma treatment" is not currently claimed.

Applicant argues that “there are many kinds of polyester film that are not equipped with [a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% of greater at 400 nm]...polyethylenetelephthalate (PET) film, that contains no UV absorber is not equipped [with such a property]" (pp 8 of Arguments).

The Examiner notes again that the arguments are not commensurate in scope with the claims as Applicant has not claimed a polyester film containing a UV absorber. Applicant's specification states that the use of a UV absorber is **preferred** and not

essential to the product (pp 5 of Specification). Also, Applicant's specification specifically cites the use of PET as the polyester (pp 3 of Specification) which is also taught by Nakamura and Abe. Further, Applicant has failed to provide any evidence supporting the assertion that a PET film that contains no UV absorber is not equipped with a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% of greater at 400 nm.

Applicant argues that "ordinal polyester film does not show heat shrinkage rate of (C) (where (C) is the polyester film having an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and widthwise direction of the film upon treatment for 10 minutes at 200°C). The heat shrinkage rate of the polyester film of the present invention is achieved by heat treatment that is described in the specification" (pp 8 of Arguments).

The Examiner notes again that the arguments are not commensurate in scope with the claims as this "heat treatment" supposedly dictating the heat shrinkage rate of the polyester film is not present in the instant claims. Further, Applicant is directed above for a full discussion of the reference as applied to the heat shrinkage rate of the polyester film. If it is not taken that the difference in heat shrinkage between lengthwise and widthwise directions is inherent to the specified film, then it would have been obvious to one of ordinary skill in the art to modify the heat shrinkage rates of the film to maintain similar shrinkage in both direction as evidenced by Applicant's Specification (pp 8, line 29 to pp 9, line 11). Applicant's Specification teaches that the modifications

of a film by a heat treatment step or a heat relaxation step to alter the heat shrinkage rates in the lengthwise or widthwise directions are well known in the art.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon Gardner whose telephone number is (571)270-5270. The examiner can normally be reached on Monday to Thursday, 5am-3pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571.272.1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. G./
Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795